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RADIATION SAFETY MANUAL

PREFACE

No amount of radiation is safe if no safety precautions are taken, yet if adequate safety precautions are taken almost any amount of radiation can be worked with safely.

To insure that the ever-increasing use of radiation at the NIH is used safely a Radiation Safety Committee was formed in 1949. This Committee is charged not only with providing advisory services on radiation safety but also with responsibility for forming radiation safety policy. This Committee shall have jurisdiction for safety measures over all use of radioactive materials and all radiation producing machines (including X-ray units, electron microscopes, etc.) that may be used at the Bethesda NIH buildings. At present the Committee consists of Victor E. Archer (Chairman), Howard L. Andrews, Bert R. Boone, Allen B. Eschenbrenner, and James C. Reid.

DEC 11 '52

The Radiation Safety Committee is issuing this Radiation Safety Manual (replacing "Precautions for Protection from Radiation at the NIH" issued June 20, 1949) for the information, guidance, and compliance of all individuals under its jurisdiction who use radioactive materials or radiation producing machines.

It is realized that this manual cannot cover all exigencies so the Committee is empowered to make inspections and to carry out emergency measures as it deems necessary. The Committee is directed to report violations of safety practice which are not corrected after reasonable notice and negotiation, to my office for suitable action.

W. H. Sebrell, Jr. Director
National Institutes of Health

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A. GENERAL

1. Scope of Manual

1.1 This manual is not intended as a complete treatise on radiological health protection, but rather is intended to outline procedures approved by the NIH Radiation Safety Committee. For more complete information, all radiation workers are urged to familiarize themselves with the following National Bureau of Standards Handbooks: No. 23, Radium Protection; No. 41, Medical X-Ray Protection up to Two Million Volts; No. 42, Safe Handling of Radioactive Isotopes; No. 47, Recommendations of the International Commission on Radiological Protection and of the International Commission on Radiological Units 1950; No. 48, Control and Removal of Radioactive Contamination in Laboratories; No. 49, Recommendations for Waste Disposal of Phosphorus-32 and Iodine-131 for Medical Users; No. 51, Monitoring Instruments and Methods. Any of these handbooks may be obtained at the Radiation Safety Office.

1.2 This manual is intended to apply the principles laid down in these Bureau of Standards handbooks to the particular situation found here and to supplement them. It is intended, in general, to apply equally to the users of radioactive isotopes and to the users of radiation producing machines, although some statements obviously apply more to one than the other.

2. Changes

2.1 The Radiation Safety Committee will amend or modify this manual as more technical information becomes available.

3. Procurement of Radiation Sources

3.1 The Radiation Safety Office must be notified of the procurement of all radiation sources whether radiation producing machines, AEC produced or accelerator produced isotopes, radium, or other radioactive materials.

3.2 The Isotopes Division of the Atomic Energy Commission has issued the NIH a general authorization for the procurement of radioisotopes. This general authorization is contingent upon the existence here of a Radiation Safety Committee which keeps records of the receipt, storage, use, transfer, and disposition of radioisotopes, which assures observance of safety standards established by the Atomic Energy Commission, which assures that investigators are qualified and equipped to handle radioactive materials safely, and that proposed uses are safe. Neither the

AEC nor the NIH Radiation Safety Committee is concerned in evaluating the scientific merit of a proposed investigation. The NIH is investigated regularly by AEC representatives to insure that we are meeting their requirements. Any serious violations will result in the loss of our general authorization privileges.

3.3 To implement this general authorization the following provisions are effected:

(a) When the use of radioisotopes is planned, Form RS-1 "Application for use of Radioisotopes at the National Institutes of Health" must be completed by the investigator and sent direct to the Radiation Safety Office. This form constitutes the required notification referred to in 3.1 above and covers **only** the quantities specified therein.

(b) The nature of the action on the application by the Radiation Safety Committee will be given the requesting investigator by telephone. The application will be retained in the Radiation Safety Office.

(c) Upon receipt of notice of approval, the material desired may be requisitioned in the usual manner by using a standard NIH requisition form which shall be clearly labeled "Radioisotope Order." The requisitions must be complete in all normal respects and in addition specify that delivery be made to Dr. V. E. Archer, Building T-3. The requisition is routed as usual.

(d) The purchase order will then be prepared by Purchase and Supply Branch and routed through the Radiation Safety Office for final approval. The Radiation Safety Officer will indicate his approval and place our AEC General Authorization number on the purchase order and forward it to the supplier.

(e) Inasmuch as the Radiation Safety Office will be the receiving point on the NIH reservation for such material and will make the actual delivery to the ordering investigator, any changes in the original shipping instructions should be furnished the Radiation Safety Office by the investigator or the Institute ordering office serving him. Shipping information received from the supplier by the Purchase and Supply Branch will be furnished immediately to the Radiation Safety Office which in turn will keep the ordering investigator properly informed.

3.4 Form RS-1 must be completed and forwarded to the Radiation Safety Office **regardless of the method of acquisition.** In cases other than purchase, the form serves as the required notice to the Radiation Safety Committee that the receipt of radioactive

material is contemplated through gifts or transfers from sources outside the NIH. No transfers may be made within the NIH without specific approval of the Radiation Safety Committee.

4. Transfer of Radiation Sources

4.1 The recipient of any material to be shipped from NIH must secure prior approval from the Atomic Energy Commission and furnish a copy of his authorization to the NIH Radiation Safety Office before shipment may be made. (Non-compliance with this requirement is a violation of the Atomic Energy Act and is subject to criminal prosecution as well as denial to us of further AEC controlled radioisotopes.)

4.2 When empty isotope containers are to be returned to the supplier, or when any radioactive material is to be shipped from the Institutes, the shipper must notify the Radiation Safety Office instead of the NIH Shipping and Receiving Branch. The Radiation Safety Office will pick up any such shipment on telephoned request. The usual shipping request ticket is to be prepared and will accompany the container.

5. Principles Underlying Protective Measures

5.1 **To reduce the amounts of external radiation to as low levels as is practical, being certain that these levels are below the permissible levels.** For external radiation these permissible levels are 0.3 rep per week for whole body radiation. This level also applies to all local radiation except the hands or feet which is 1 rep per week. This is fulfilled by applying the following principles to external radiation exposures: keep the time of exposure to a minimum; keep human tissues at as great a distance from the radiation source as practicable; keep adequate shielding material between the source and human tissue.

5.2 **To prevent ingestion, inhalation or transcutaneous absorption of radioactive materials.** This is fulfilled by good housekeeping and work habits, and by operation in a laboratory properly equipped for the handling of radioisotopes, including protective coverings, manipulative devices, suitable ventilation, and waste disposal facilities.

5.3 **Adequate planning.** Before an experiment is performed, the worker should determine the types and amount of radiation or radioactive material to be used. This will generally give a good indication of the protection required. The procedure must be well outlined. In most cases before the procedure is actually performed with radiation, it should be "rehearsed" so as to

preclude slip-ups or unexpected circumstances. In any situation where there is appreciable radiation hazard, the Radiation Safety Office must be consulted before proceeding.

B. PERSONNEL

6. Rules for Radioisotope Users

6.1 No smoking or eating in radioisotope laboratories. (This includes gum, candy, beverages.)

6.2 Food containers, such as milk bottles, are not permitted in radioisotope laboratories. Refrigerators will not be used jointly for foods and radioactive materials.

6.3 Keep fingernails short and clean.

6.4 Do not work with radioactive materials if there is a break in the skin below the wrist.

6.5 Do not pipette by mouth. Use rubber bulbs, syringes, or mechanical devices.

6.6 Wash hands and arms thoroughly before handling any object which goes to the mouth, nose, or eyes (e.g., cigarettes, cosmetics, food).

6.7 Keep or transport materials in such a manner as to prevent breakage or spillage (double container).

6.8 Check with Radiation Safety Office for special precautions before using alpha emitters.

6.9 Never perform radioactive work outside exhaust hoods or glove boxes until serious consideration has indicated the safety of doing so.

6.10 Keep laboratory neat and clean. The work area should be free from equipment and materials not required for the immediate procedure.

6.11 Notify supervisor and/or Radiation Safety Office immediately in the event of any radiological emergency (See paragraphs 27 to 31 below).

6.12 The individual causing contamination will be required to perform the major portion of the decontamination -- under supervision of the Radiation Safety Staff (See paragraph 29.3 below).

6.13 Use trays, preferably stainless steel, covered with absorbent paper over bench tops and in hoods to collect material in event of spill.

6.14 **Self Monitoring.** Each worker is responsible for monitoring his hands, clothing, shoes, or any other parts that may be contaminated. Hand checks are mandatory before leaving the work area for lunch or at the end of the workday. Decontamination must be done whenever contamination of skin or clothing exists. Call the Radiation Safety Office for assistance.

6.15 Always wear the assigned film badge and/or pocket chamber when working in the radioisotope laboratories and any other time when there is possible radiation exposure.

6.16 No radioactively contaminated wastes shall be disposed of by the conventional methods of disposing of non-radioactive wastes. See Paragraphs 32 to 34 below for details and exceptions.

6.17 Before allowing any physician to treat a disease with radiation, be certain that he knows you are a radiation worker. (This does not apply to X-rays used for diagnostic purposes.)

6.18 Request a physical examination from the Radiation Safety Office when you are about to be discharged from or assigned away from NIH, or when you stop working with radiation.

6.19 Pregnant women are warned to exercise special caution against exposure to radiation, since present knowledge of radiation effects on the unborn child is incomplete.

7. Rules for Users of Radiation Producing Machines

7.1 Always wear the assigned film badge and/or pocket chamber when working with the machines. Personnel monitoring devices are useless when left in desk drawers.

7.2 Notify the Radiation Safety Office when there is any significant change in the setup: i.e., new equipment installed, changes in shielding, change in output of radiation, or change in usage of the unit.

7.3 The operator must never expose himself to the direct beam of his X-ray unit.

7.4 Make full use of protective barriers, lead aprons, and gloves.

7.5 Faithfully observe any restrictions on use of the machines recommended by the Radiation Safety Office.

7.6 Before allowing any physician to treat a disease with radiation, be certain that he knows you are a radiation worker. (This does not apply to X-rays used for diagnostic purposes.)

7.7 Pregnant women must exercise special precaution. (See paragraph 6.19 above.)

8. "Protective Clothing"

8.1 To X-ray workers this means lead aprons and lead gloves. To radioisotope workers it means rubber gloves, goggles, face shield, or face mask, cotton laboratory coats or special disposable cotton uniforms, cloth covers for shoes that are worn only in the laboratory.

8.2 Most radioisotope work being done here is of such nature and uses such low amounts that laboratory coats and rubber gloves will be adequate.

8.3 The following rules apply to cotton clothes worn as "protective" clothing to prevent contamination of street clothes:

a. They must be worn at all times while working with radioactive materials, and must not be worn in other areas.

b. Do not keep in lockers with street clothing or other materials.

c. Coats must be worn buttoned up. They must be checked at regular intervals for contamination. They **must** be checked for contamination before being sent to the laundry.

d. If such clothing is found at any time to be comtaminated so that any point on it gives a reading of more than double background, then it shall be turned over to the Radiation Safety Office for decontamination or disposal.

9. Medical Records

9.1 Blood studies on all individuals working with or near any radiation source will be done regularly at three-month intervals or more often in special cases.

9.2 **Medical History.** Individuals are earnestly requested to supply the Radiation Safety Office with information regarding nonoccupational radiation exposures, tumors, familial diseases, etc.

9.3 Physical Examinations. The known biological effects of chronic exposures to low levels of radiation (either internal or external) would not likely be picked up on annual physical examinations until they had progressed to an irreversible degree. Changes in the blood are the most sensitive index we possess of biological damage. Blood changes from chronic external exposures occur only when the exposures are of sufficient magnitude to be readily detected by present personnel monitoring methods.

In view of the above paragraph and in view of the fact that the National Bureau of Standards and some Atomic Energy Commission installations recommend annual physical examinations on all radiation workers, the following policy has been adopted:

a. That radiation workers be given an initial and a discharge physical examination. Whenever applicable, a copy of the pre-employment physical examinations done by the Employee Health Service or other Public Health Service installation will suffice. Such examinations would also serve as the discharge physical examination when a report is available.

b. That annual physical examinations for radiation workers be determined on an individual basis by the Chairman of the Radiation Safety Committee. These examinations ordinarily will be limited to those individuals who are apparently receiving significant exposures, those who have received high exposures in the past, those individuals for whom adequate monitoring procedures do not exist, any individuals showing abnormal blood changes or other special conditions, or any individuals receiving unusual exposure.

10. Personnel Monitoring

10.1 Film badges must be worn routinely at all times and by all personnel where significant exposure to radiation is possible. These films will be furnished, changed, developed, and read at regular intervals by the Radiation Safety Office.

10.2 If visiting other installations where radiation exposure is possible, an NIH film badge shall be worn in addition to any personnel monitoring procedures of the installation visited. This provision is for the purpose of keeping exposure records complete.

10.3 In addition to film badges, pocket chambers or pocket dosimeters are available for use during the more hazardous procedures. The advantage over film badges is that they can be

read immediately. At his discretion the Radiation Safety Officer may prescribe the use of these instruments by individuals or by a group during specific procedures.

C. AREAS IN WHICH RADIATION IS USED

11. Area Monitoring

11.1 Areas in which radioactive materials are being used shall be checked for contamination at least once daily by the radiation workers in that laboratory. Any contamination observed shall be reported to the Radiation Safety Office.

11.2 In addition to the daily checks designated in 11.1, the Radiation Safety Officer or aides will routinely make a complete survey of areas in which radioactive materials are being used every two months or oftener at the discretion of the Radiation Safety Officer. The results of these surveys will be recorded and kept on permanent file.

11.3 In addition to the routine checks designated in 11.1 and 11.2, these areas will be inspected each time there is reason to question the degree of contamination.

11.4 Film badges may be used for area monitoring at the discretion of the Radiation Safety Officer, but shall not be relied on to replace the routine area monitoring outlined above.

11.5 Monitoring of areas in which there are radiation producing machines will be done on installation of the machine, and on any significant change in the machine itself or in its use. (See paragraph 7.2 above.)

12. Equipment

12.1 Equipment, such as glassware, used in laboratories for radioactive materials, shall be kept separate from other equipment. Once used for radioactive substances it shall not be used for other work, or shall not be sent to the repair or glass cleaning shops until demonstrated to be free of contamination by the Radiation Safety Office.

12.2 It is strongly recommended that a separate storage cabinet be provided for glassware and tools used in radioactive work. This cabinet must be plainly marked with radiation hazard signs.

13. Warning Signs

13.1 Areas in which radiation producing machines or radioactive materials are located or are being used shall be posted with characteristic signs warning of the radiation hazard. Appropriate radiation hazard tags, tape and decalcomania are available from the Radiation Safety Office.

14. Posting of Rules Summary

14.1 The Radiation Safety Office will furnish each area in which radiation is used with a summary of the applicable rules set down in this manual. This sheet must be kept posted on the laboratory wall.

15. Prevention of Tampering by Casual Personnel

15.1 In addition to being posted as designated in paragraph 13.1 above, precautions must be taken to prevent tampering by casual personnel. This may be done by locking the switchbox of radiation producing machines, or by placing radioactive materials in a place not readily accessible to casual personnel. In extreme cases and only with the approval of the Radiation Safety Officer, may room doors be locked.

15.2 In cases where a unit is to be left operating unattended, a suitable interlock system must be provided to prevent radiation exposures to casual personnel.

16. Sinks

16.1 To restrict the possibility of general sink contamination, each laboratory or group of rooms using radioactive materials shall designate a sink as a "hot" sink. Only this one should be used when working with radioactive substances in order to localize contamination. However, this paragraph shall not be construed as advising that radioactive materials be disposed of down the drain. See paragraphs 32-34 below.

17. Waste Containers

17.1 Each laboratory working with radioactive substances shall have at least one container for solid radioactive waste and one for liquid radioactive wastes. These containers shall have characteristic markings. See paragraph 34 below.

18. Contamination Levels

18.1 In general any detectable contamination of floors, walls, table tops, hoods, sinks, etc., shall be reported to the Radiation Safety Office. The Radiation Safety Office will take appropriate action.

18.2 A contaminated area which emits over 10 millireps per hour is seriously contaminated. Personnel must not work in an area where radiation exceeds this amount without supervision by one of the staff of the Radiation Safety Office.

19. Radioisotope Laboratory (Building T-3)

19.1 This laboratory is equipped for the handling of high levels of activity. Space is available in this laboratory to all NIH workers on an allocation basis. Radioisotope work will be done in this building unless the Radiation Safety Committee grants approval to do the work elsewhere.

20. Strippable Paint

20.1 To prevent contamination of surfaces, it may be advisable to use strippable paint. The Radiation Safety Office is equipped to apply this, when it is indicated.

21. Monitoring Instruments

21.1 Every laboratory using radioactive materials must have some type of radiation monitoring instrument. The Radiation Safety Office has a number of suitable instruments which can be loaned to investigators who do not have their own.

22. House Vacuum Lines

22.1 House vacuum lines are vulnerable to contamination. The Radiation Safety Office has several vacuum pumps available for use with radioactive materials. However, these pumps must not be permitted to exhaust into room air. If house vacuum lines are to be used, the withdrawn gas must be demonstrated to the Radiation Safety Officer to be free of radioactivity.

D. STORAGE

23. Stock

23.1 Radiation at the surface of the containers of any radioactive materials shall not exceed 200 mr. per hour and the

container shall be kept in such a place that the radiation intensity at the nearest occupied area is 5 mr. per hour or less.

23.2 Such containers shall be kept in a place not readily accessible to casual personnel when not in use and shall be conspicuously labeled with radiation hazard signs.

23.3 Storage facilities are maintained at Building T-3. Radiation workers ought to store all radioisotopes for which they have no immediate use, in Building T-3.

24. Gaseous Products

24.1 Radioactive gases or materials with radioactive gaseous daughters must be stored in gas tight containers and must be kept in areas having good ventilation.

25. Labeling

25.1 All containers of radioactive substances, as well as all contaminated supplies or equipment shall be clearly labeled. Distinctive tags are available from the Radiation Safety Office.

26. Record of Isotopes on Hand

26.1 The Radiation Safety Office has the responsibility of maintaining a periodic inventory of all radioactive materials and will regularly obtain information on the amount remaining.

E. RADIOLOGICAL HEALTH EMERGENCIES

27. Definition

27.1 As used here, the term "Radiological Health Emergency" shall apply to any incident pursuant to the use of radiation producing machines or to radioactive substances, which produces radiation overexposure to an individual, or which produces contamination of personnel or areas. This includes minor as well as major incidents.

28. Notification

28.1 The Radiation Safety Office shall be notified immediately of any radiological health emergency. Upon notification, the Radiation Safety Office will take immediate remedial steps.

29. Procedures for Area Contamination Accidents

29.1 Notify supervisor, Radiation Safety Office and others working in same room (if this can be done without excessive spread of contamination). If accident occurs outside regular work hours, call the Guard Office which has the list of Radiation Safety personnel on emergency call.

29.2 Limit spread of contamination.

a. Do not allow newcomers to enter the contaminated area unprepared.

b. Permit no one to leave the contaminated area without clean footwear. Exception must be made to avoid overexposure.

c. **Prevent flow of activity** with liquid carriers: apply absorbers, raise barriers (putty, etc.), seal cracks in floors, desk tops, etc. (putty, quick drying plastics, etc.).

d. **If contamination is air-borne,** hold breath or hold wet handkerchief over nose and mouth, close windows and doors, shut off fans or air conditioners and leave room as quickly as possible.

e. Do not turn on ventilating equipment.

29.3 **Decontamination.** The individual responsible for the incident will be expected to do most of the cleanup under the supervision of the Radiation Safety Staff.

30. Procedures for Personnel Contamination Accidents

30.1 Notify supervisor and Radiation Safety Office immediately. If accident occurs outside regular work hours, call the Guard Office which has the list of Radiation Safety personnel on Emergency call.

30.2 Remove any contaminated clothing.

30.3 **If open wounds are contaminated, flush the wound with water immediately,** preferably under running water from tap. The Radiation Safety Office may use other decontamination procedures but immediate flushing with water is most effective.

30.4 **If ingestion** of radioactive material has occurred, **make the individual vomit.** The most prompt and effective method is

to have the individual tickle the back of his throat with a finger. Repeated vomiting should be induced, and the individual should drink 2 to 4 glasses of lukewarm water between times. The Radiation Safety Office must be notified immediately as most radioactive materials are deadly poisons when taken internally. This office will, in turn, notify the Employee Health Service.

31. External Radiation

31.1 If any individual suspects that he has received an overexposure of external radiation from any source, he should immediately inform the Radiation Safety Office.

31.2 He should be removed from areas in which he might conceivably receive more radiation, and should not be allowed to return to work in such areas until this has been approved by the Radiation Safety Officer.

F. DISPOSITION OF WASTES

32. General Rule

32.1 No radioactively contaminated wastes shall be disposed of by the conventional methods of disposing of non-radioactive wastes. This means particularly that contaminated solid wastes may not be allowed to be collected by the garbage collector and that contaminated liquid wastes may not be discharged into the sewer (see exception below, paragraph 33). Contaminated animals must not be incinerated in general purpose incinerators.

33. Exceptions

33.1 In the case of dilute solutions of radioactive materials which have a half-life of **less than three months,** exception may be made to paragraph 32 above. Clear liquids may be discharged into the sewer, providing that a single user discharges no more than 5.0 microcuries in any one day. Any such discharge must be flushed down with copious amounts of water. Larger amounts than this and all materials having half-lives of over three months will be collected by the Radiation Safety Office. In practice, for those individuals doing low level tracer work this means they should generally save only the first rinse water when washing contaminated glassware.

33.2 In accordance with National Bureau of Standards Handbook 49, somewhat larger amounts of I^{131} and P^{32} may be discharged to the sewer. This handbook states that up to 10 mc. of these two substances by the "single batch" method or 100 mc. by "constant

drip bottle" method may be discharged per day for each million gallons of sewage flow per day. Since NIH averages about 200,000 gallons per day, the above figures for NIH are 2 millicuries for "single batch" and 20 millicuries for "constant drip" methods in any one day.

To eliminate the possibility that several individuals at NIH might each discharge the maximum amount during the same day, any I^{131} or P^{32} waste may be disposed of in this way only under the direct supervision of the Radiation Safety Office.

34. Radioactive Waste Containers

34.1 Each laboratory using radioactive isotopes must have at least one container for contaminated solid wastes and one for contaminated liquid waste. Solid and liquid contaminated wastes shall be kept separately.

34.2 The container for solid waste may be of the usual type but must be kept fitted with a disposable paper liner. Special containers are available on loan from the Radiation Safety Office. Glass jugs or carboys are probably best for storage of liquid wastes, although disposable metal cans may be used. If it is glass or ceramic, then it must be kept in such a place that if accidentally broken, the contents will be retained in a small area (e.g., having it set in a large pan).

34.3 Waste containers must possess securely fitting covers or corks and must be kept closed.

34.4 Each waste container must have yellow and magenta stripes or be tagged with a Radioactive Hazard sign. Maintenance employees (janitors, etc.) have been instructed in the meaning of these colored stripes and symbols, and must be repeatedly instructed never to empty them.

34.5 Waste containers shall be monitored by the user after each addition of radioactive waste. Whenever the reading at the outside surface of the container becomes greater than 6 mr. per hour, it must be emptied and decontaminated before reuse.

34.6 Complete records must be kept of disposed radioactive waste. This is a requirement made by the Atomic Energy Commission. The cooperation of all radioisotope users is essential to preclude loss of our isotope procurement privileges. Whenever waste containing 100 microcuries or greater is put into a waste container, a record of the material and its approximate activity must be kept on a sheet provided for that purpose.

34.7 When notified, the Radiation Safety Office will pick up filled containers and dispose of the contents.

G. SUPERVISION

35. Responsibilities of Supervisors

The individual who supervises work which utilizes radiation producing machines or radioactive isotopes has, in addition to his usual duties, the following responsibilities:

35.1 To be aware of the nature and hazards of ionizing radiation.

35.2 To enforce the personnel rules set forth under 6, 7, and 8 of this manual.

35.3 To see that necessary equipment for working safely is available to personnel working with radiation -- such as shields, gloves, long-handled tongs, etc. The Radiation Safety Office may be consulted for specific recommendations.

35.4 To report all radiological health emergencies to the Radiation Safety Office.

35.5 Indoctrination of new employees in radiation protection. This applies to all individuals who may have occasion to enter areas in which radiation is used. The Radiation Safety Committee stands ready to give any assistance needed in this indoctrination.

35.6 Inform the Radiation Safety Office of the procurement of new radiation sources -- new radiation producing machines and all radioisotopes -- including radium, uranium, etc.

35.7 See that radioactive materials used under his supervision are disposed of according to the provisions of paragraph 32-34 above.

35.8 Request the Radiation Safety Office to schedule termination physical examinations for radiation workers who are leaving NIH.

36. Supervision by Radiation Safety Committee

36.1 Representatives of the Radiation Safety Committee will make periodic inspections of facilities as outlined in Paragraph 11 above.

36.2 These inspections cannot closely supervise day to day operations. Therefore, the full and sincere cooperation of supervisors and personnel is necessary in carrying out the provisions of this Manual, in order that neither our employees nor the general public will be harmed by our use of radiation.

36.3 The Radiation Safety Committee and its representatives stand ready at all times to assist in your radiation work. Consult them about any radiation problems; get their safety suggestions.

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